



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,330	07/02/2003	Esin Cubukcu	21980-04012	3819
24/024 7590 02/03/2009 CALFEE HALTER & GRISWOLD, LLP 800 SUPERIOR AVENUE SUITE 1400 CLEVELAND, OH 44114				
EXAMINER ALEJANDRO, RAYMOND				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
02/03/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocket@calfee.com

dcunin@calfee.com

### Office Action Summary

**Application No.**

10/612,330

**Applicant(s)**

CUBUKCU ET AL.

**Examiner**

Raymond Alejandro

**Art Unit**

1795

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 4, 5 and 7-31 is/are pending in the application.
- 4a) Of the above claim(s) 1 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-5 and 7-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 July 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

This office correspondence is submitted in reply to amendment filed by the applicant on 11/10/08. The amendment does not appear to overcome the grounds of rejection as set forth in the prior office action. Explanation concerning this matter is articulated hereinbelow. Refer to the foregoing amendment for substance of applicant's rebuttal arguments and remarks. Thus, the present claims are finally rejected over the same grounds of rejection as composed infra on the written record:

### *Election/Restrictions and Claim Disposition*

1. This application contains claim 1 drawn to an invention nonelected with traverse in the reply filed on 06/26/06. A complete reply to the final rejection **must include cancellation** of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.
2. Claim 6 has been cancelled.

### *Oath/Declaration*

3. The oath or declaration submitted on 11/10/08 is **still** defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

- *Non-initialed and/or non-dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c). It bears noting that the following inventors: Esin Cubukcu, Ravi Dodeja and Sandeep Chawla made alterations which are neither initialed nor dated.*

***Inventorship***

4. The request for the deletion of an inventor in this nonprovisional application under 37 CFR 1.48(b) has been entered and made of record.

*Note: see the section Response to Applicant's arguments infra for issues related to this amendment of inventorship, the declaration filed on 11/10/08 and the prior art rejection.*

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 4-5, 7-21 and 23-31 are rejected under 35 U.S.C. 102(c) as being anticipated by Cubukcu et al 6132573.

The applied reference has common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(c). This rejection under 35 U.S.C. 102(c) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

The present application is directed to a method for manufacturing a ceramic composite oxygen or power generation cell wherein the disclosed inventive concept comprises the specific steps being carried to form the cell.

As to claim 4:

Cubukcu et al disclose ceramic composite electrolytic devices and method for manufacture thereof (TITLE/ABSTRACT), the device is an oxygen generating device (COL 14, line 65). Cubukcu et al teach placing a ceramic material 60 on a hole pattern section 80 of an alloy (COL 8, lines 34-65/ COL 13, lines 25-45/COL 10, lines 5-25/COL 9, lines 3-10) and firing them to form a ceramic composite material (COL 8, lines 34-65/ COL 13, lines 25-45/ COL 10, lines 5-25/COL 10, lines 44/COL 6, lines 37-55). Then, follows application of electrode layers (*the electrically conductive material*) including firing the whole composite material (COL 13, lines 40-65); thereafter, a bipolar foil 50 contacting/engaging the ceramic composite is provided (COL 14, lines 34-40/COL 6, lines 20-55/ COL 7, lines 30-37/ COL 9, lines 35-45/COL 5, lines 29-40) and an air tight seal (chamber) is formed (COL 10, lines 36-40/COL 14, lines 44-50).

As to claim 5:

Specifically, the application of the ceramic material by dipping on a hole pattern of a metal member is disclosed (COL 10, lines 5 & 20-23/ COL 12, lines 42-56/COL 8, lines 34-65/ COL 13, lines 25-45/COL 10, lines 5-25/COL 9, lines 3-10).

As to claim 6:

As disclosed by Cubukcu et al, an air tight seal (chamber) is formed between the ceramic material and the bipolar metal (COL 10, lines 36-40/COL 14, lines 44-50).

Art Unit: 1795

As to claim 7:

The formation of an oxygen egress tube 67 is disclosed (COL 15, lines 55-65/COL 6, lines 10-15) as well as a shell outlet 136 connected to the manifold (COL 16, lines 1-15); and gas out passageways (COL 4, lines 20-27). *Thus, an output for exhausting gas is disclosed.*

As to claims 8 and 20:

The specific application of a catalyst material is disclosed (COL 6, lines 56-65)

As to claim 9:

Electrical contact layers 53 on the dimples of bipolar foil 50 are also disclosed (COL 15, lines 13-17). *These layers serve as the current collectors.*

As to claim 10:

A seal coat is disclosed (COL 12, lines 5-10) as well as an air tight seal (chamber) is formed between the ceramic material and the bipolar metal (COL 10, lines 36-40/COL 14, lines 44-50) and a base coat slip (COL 13, lines 25-27).

As to claim 11:

Metallic cell frames are also taught (COL 14, lines 34-40 & COL 14, line 65 to COL 15, line 10/COL 7, lines 6-15).

As to claim 12:

Disclosed is that weld must provide a hermetic and permanent gas tight seal (COL 14, lines 60-65). *Thus, the welding step is disclosed.*

As to claims 13-14:

Dimple patterns by embossing are formed on the metallic bipolar foil (COL 5, lines 39-45/COL 5, lines 57-59/COL 4, lines 53-60). *They represent 3-D structures.*

Art Unit: 1795

As to claim 15:

A photolithographic member is disclosed as well as the formation of the hole pattern as results of photolithographic techniques (COL 9, lines 4-10/ COL 8, lines 35-62/COL 4, lines 59-61/COL 6, lines 1-2/COL 7, lines 24-26). Thus, the technique of photolithography is employed.

As to claims 16 and 30:

A seal coat is disclosed (COL 12, lines 5-10) as well as an air tight seal (chamber) is formed between the ceramic material and the bipolar metal (COL 10, lines 36-40/COL 14, lines 44-50) and a base coat slip (COL 13, lines 25-27).

Metallic cell frames are also taught (COL 14, lines 34-40 & COL 14, line 65 to COL 15, line 10/COL 7, lines 6-15).

Dimple patterns by embossing are formed on the metallic bipolar foil (COL 5, lines 39-45/COL 5, lines 57-59/COL 4, lines 53-60). *They represent 3-D structures.*

Thickness of the metal member is 0.002 or 0.004 inches (COL 8, lines 41-43).

As to claims 17 and 31:

The formation of an oxygen egress tube 67 is disclosed (COL 15, lines 55-65/COL 6, lines 10-15) as well as a shell outlet 136 connected to the manifold (COL 16, lines 1-15); and gas out passageways (COL 4, lines 20-27). *Thus, an output for exhausting gas is disclosed.* Additionally, passages 42 for providing air into the device 10 and an oxygen output 44 for supplying oxygen from the device are disclosed (COL 4, lines 29-32).

Additionally, a resistance heat element 14 and an fan 30 are disclosed (COL 4, lines 20-30). Reference numeral 12b are arms (COL 15, lines 55-56).

As to claim 18:

Thickness of the metal member is 0.002 or 0.004 inches (COL 8, lines 41-43). The hole pattern has the shape of an hexagonal close pack cell (Col 4, lines 61-64/Col 8, lines 43-45).

As to claim 19:

Reference numeral 12b are arms to ensure oxygen egress (COL 15, lines 55-56/COL 6, lines 14-18). The formation of an oxygen egress tube 67 is disclosed (COL 15, lines 55-65/COL 6, lines 10-15) as well as a shell outlet 136 connected to the manifold (COL 16, lines 1-15); and gas out passageways (COL 4, lines 20-27). *Thus, an output for exhausting gas is disclosed.* Additionally, passages 42 for providing air into the device 10 and an oxygen output 44 for supplying oxygen from the device are disclosed (COL 4, lines 29-32).

As to claim 21:

*As best understood, it is contended that when the claimed device is used as an oxygen generating device, no fuel is required to be stored. Fuel is required when the device is used as a power generating device. Thus, the oxygen generation device of Cubukcu et al meets such a requirement.*

As to claim 22:

Silver is used as part of the anode and cathode (COL 13, lines 44-47). Layers of metals such as platinum or palladium or iridium or noble metal such as gold are used in combination with Ag-layers (COL 6, lines 56-60/COL 6, lines 22-27). Disclosed is the use of bismuth barium oxide solid electrolyte (COL 13, lines 55-58).

As to claims 23 and 27:

Cubukcu et al disclose assembly of the oxygen generating device (COL 14, lines 65-67) providing at least a stack comprising two cells (COL 14, line 65 to COL 15, line 17) including



Art Unit: 1795

respective anode sides and cathode sides (COL 15, lines 1-5) and respective electrical contact layers 53 (*the current collectors*) on the dimples of the bipolar foil 50, and the electrode layer or cermet 112 on both sides of the ceramic composite material. The cathode supported on member 60 contacts the contact layers 53 of the bipolar foil 50 of an adjacent cell 12 (COL 15, lines 10-35). Components are interconnected to form a gas-tight seal (COL 14, lines 44-48).

As to claims 24-26:

A stack of cells is provided within a thermal shell 24 (COL 16, lines 37-57/ COL 4, lines 22-25). In addition to that, it is contended that the combination of insulating material 28, heat element 14 including two heating plates 62" (COL 16, lines 38-55); stack duct member 140, exhaust duct 142 (COL 16, lines 58-65); and a layer of sealing material 168 (COL 17, lines 33-37) conform to a 3 layer structure providing a shell feature.

As to claim 28:

Resistance heat elements 14 are disclosed (COL 4, lines 20-30) and heat element 14 includes two heating plates 62" wherein one plate 62a" is engaged on top of the cell stack, the other is on the bottom (COL 16, lines 38-55).

As to claim 29:

A stack of cells is provided within a thermal shell 24 (COL 16, lines 37-57/ COL 4, lines 22-25). Resistance heat elements 14 are disclosed (COL 4, lines 20-30) and heat element 14 includes two heating plates 62" wherein one plate 62a" is engaged on top of the cell stack, the other is on the bottom (COL 16, lines 38-55). Respective electrical contact layers 53 (*the current collectors*) on the dimples of the bipolar foil 50 are disclosed (COL 15, lines 10-35).

Therefore, the present claims are anticipated.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cubukcu et al 6132573 as applied to claim 6 above, and further in view of LaConti et al 4528083.

Cubukcu et al is applied, argued and incorporated herein for the reasons expressed above.

Additionally, Cubukcu et al teaches that silver is used as part of the anode and cathode (COL 13, lines 44-47). Layers of metals such as platinum or palladium or iridium or noble metal such as gold are used in combination with Ag-layers (COL 6, lines 56-60/COL 6, lines 22-27). Disclosed is the use of bismuth barium oxide solid electrolyte (COL 13, lines 55-58).

However, the preceding prior art reference does not expressly disclose the specific transition metal oxides (i.e. ruthenium oxide or iridium oxide or mixtures) as part of the electro-catalyst.

LaConti et al discloses that it is well-known to use platinum-iridium oxide catalyst in electrodes of electrochemical cells and methods for gas generation utilizing catalyst and electrodes (COL 1, lines 36-50) because it provides improved performance and efficiency (COL 1, lines 36-50).

Compounding the aforementioned teachings, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific transition metal oxides (i.e. ruthenium oxide or iridium oxide or mixtures) as part of the electro-catalyst of Cubukcu et al as taught by LaConti et al as LaConti et al teaches that it is well-known to use platinum-iridium oxide catalyst in electrodes of electrochemical cells and methods for gas generation utilizing catalyst and electrodes because it provides improved performance and efficiency.

10. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cubukcu et al 6132573 as applied to claim 6 above, and further in view of Janssen et al 4900406.

Cubukcu et al is applied, argued and incorporated herein for the reasons expressed above.

Additionally, Cubukcu et al teaches that silver is used as part of the anode and cathode (COL 13, lines 44-47). Layers of metals such as platinum or palladium or iridium or noble metal such as gold are used in combination with Ag-layers (COL 6, lines 56-60/COL 6, lines 22-27). Disclosed is the use of bismuth barium oxide solid electrolyte (COL 13, lines 55-58).

However, the preceding prior art reference does not expressly disclose the specific transition metal oxides (i.e. ruthenium oxide or iridium oxide or mixtures) as part of the electro-catalyst.

Janssen et al makes known that electrochemical cells such as power generating fuel cells can use as a catalyst an oxide form of noble metal such as ruthenium oxide (COL 3, lines 52-65).

Compounding the aforementioned teachings, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific transition metal oxides (i.e. ruthenium oxide or iridium oxide or mixtures) as part of the electro-catalyst of Cubukcu et al as taught by Janssen et al as Janssen et al teaches that such a specific catalyst material enhances catalytic activity of the electrode and improve fuel cell characteristics such as current density and electrical conductivity.

### ***Response to Arguments***

11. Applicant's arguments filed 11/10/08 have been fully considered but they are not persuasive.
12. Prior art rejections as postulated in the office action dated 05/08/08 still stand because there is no argument concerning technical aspects of either or both the disclosed art and/or claimed method.

The only "implicit" argument advanced by the applicant (see the 11/10/08 amendment and page 8 of the 04/02/08 RCE-amendment) is related to a request that the name of an inventor (i.e. Sandeep Chawla) be deleted from the list of inventors. Applicant has requested that "*the*

*name of Sandeep Chawla be deleted from the list of inventors of this application since he did not contribute to the subject which it claims*" (see the 11/10/08 amendment).

However, applicant's contention that the statement or request under 37 CFR 1.48(b) to correct inventorship in the present patent application implicitly obviates all prior art rejections is still insufficient to overcome the above rejections because currently there is a significant contradiction or inconsistency between the amendment of inventorship dated 11/10/08 and applicants' declaration dated 11/10/08. For instance, on the same date, 11/10/08, and by submission of written documents, applicants are deleting "*the name of Sandeep Chawla from the list of inventors of this application, whose invention is no longer being claimed in this application*" (see amendment of inventorship of 11/10/08) but simultaneously are acknowledging "*Sandeep Chawla*" as an inventor of the claimed subject matter and/or accepting the fact that such an inventor made a contribution towards the claimed subject matter (see applicants' declaration of 11/10/08). Clearly, these official statements showing "*deletion-and-inclusion*" of the same inventor (Sandeep Chawla) create ambiguity, confusion and incongruity. The declaration named "*Sandeep Chawla*" as an inventor of the presently claimed subject matter. The naming of Sandeep Chawla in the foregoing declaration is inconsistent with the amendment of inventorship under 37 CFR 1.48(b). Therefore, further correction, explanation or clarification is being requisitioned for the reasons of record and the integrity of the present application.

Applicant should understand that ALL issues concerning the above matter must be clarified before the removal of the prior art as a result of the submission of the foregoing amendment of inventorship which implicitly provides a reason to overcome the rejection under Section 102(e) because in the applied primary reference the following is no longer applicable:

Art Unit: 1795

*“the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States...”*.

13. With respect to the amendment to inventorship, as discussed above, the request for the deletion of an inventor in this nonprovisional application under 37 CFR 1.48(b) has been entered and made of record.

14. With respect to the declaration filed by the applicant on 11/10/08, it is defective because: *Non-initialed and/or non-dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c).*

- *It bears noting that the following inventors: Esin Cubukcu, Ravi Dodeja and Sandeep Chawla made alterations which are neither initialed nor dated.*

Additionally, the declaration also named “Sandeep Chawla” as an inventor of the presently claimed subject matter. The naming of Sandeep Chawla in the foregoing declaration is inconsistent with the amendment of inventorship under 37 CFR 1.48(b).

### ***Conclusion***

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raymond Alejandro/  
Primary Examiner, Art Unit 1795